REMARKS

Claims 1 and 3 through 8 are amended. Thus, Claims 1 through 8 are presented for examination as amended.

Amendments have been made to the claims to cancel reference numerals and to eliminate multiple dependencies. Such changes do not introduce any new matter into the application.

Respectfully submitted,

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Title: METHOD FOR ELECTRONIC TUNING OF THE READ OSCILLATION FREQUENCY OF A CORIOLIS GYRO

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BACKGROUND

Field of the Invention

The present invention relates to Coriolis gyros. More particularly, this invention pertains to a method for electronic tuning of read oscillation frequency to stimulation oscillation frequency in such a device.

~~The invention relates to a method for electronic tuning of the frequency of the read oscillation to the frequency of the stimulation oscillation for a Coriolis gyro.~~

Description of the Prior Art

Coriolis gyros~~,~~ (~~which are~~ also known ~~referred to~~ as "vibration gyros") are increasingly employed ~~being used to an increasing extent~~ for navigation ~~purposes, they have~~ . Such devices include a mass system that ~~which~~ is caused to oscillate. Such ~~This~~ oscillation is generally a superimposition of a large number of individual oscillations. The ~~These~~ individual oscillations of the mass system are initially independent of one another and ~~can~~ each may be regarded in the ~~an~~ abstract ~~form~~ as a "resonator" ~~resonators~~. At least two resonators are required for operation of a vibration gyro~~. one of these resonators~~ . A first resonator is artificially stimulated to oscillate, with such ~~these~~ oscillations ~~being~~ referred to below ~~in the following text~~ as a "stimulation oscillation". A ~~the~~ second resonator is stimulated to

oscillate only when the vibration gyro is moved or rotated. That is ~~Specifically~~, Coriolis forces occur ~~in this case~~ which couple the first resonator to the second resonator, draw energy from the stimulation oscillation of the first resonator, and transfer the ~~this~~ energy to the read oscillation of the second resonator. The oscillation of the second resonator is referred to below ~~in the following text~~ as the "read oscillation". In order to determine movement ~~movements~~ (in particular rotation ~~rotations~~) of the Coriolis gyro, the read oscillation is tapped off and a corresponding read signal (e.g. ~~for example~~ the tapped-off read oscillation signal) is analyzed ~~investigated~~ to determine whether any changes ~~have~~ occurred in the amplitude of the read oscillation that measures ~~which represent a measure for the~~ rotation of the Coriolis gyro. Coriolis gyros may be in the form of either ~~both~~ an open loop ~~system and~~ or a closed loop system. In a closed loop system, the amplitude of the read oscillation is continuously reset to a fixed value (preferably zero) by ~~via respective~~ control loops.

~~In order to further illustrate the method of operation of a Coriolis gyro, one example of a closed loop version of a Coriolis gyro will be described in the following text, with reference to Figure 2.~~

Figure 2 is a schematic diagram of a closed loop Coriolis gyro 1. The ~~A Coriolis~~ gyro 1 ~~such as this~~ has a mass system 2 that can be caused to oscillate and is referred to below as a ~~and which is also referred to in the following text as a~~ resonator 2 (in contrast to ~~This expression must be distinguished from~~ the "abstract"

resonators, ~~which have been~~ mentioned above, which represent individual oscillations of the "real" resonator). As already mentioned, the resonator 2 may be regarded as a system composed of two "resonators" (a first resonator 3 and a second resonator 4). Each of ~~Both~~ the first and ~~the~~ second resonators ~~resonator~~ 3, 4 is ~~are each~~ coupled to a force transmitter (not shown) and to a tapping-off system (not shown). ~~The~~ Noise ~~which is~~ produced by the force transmitter and the tapping-off system ~~systems~~ is ~~in this case~~ indicated schematically by ~~the~~ noise 1 (reference symbol 5) and ~~the~~ noise 2 (reference symbol 6).

The Coriolis gyro 1 includes ~~furthermore has~~ four control loops. A first control loop is employed ~~used~~ for controlling the stimulation oscillation (i.e. the frequency of the first resonator 3) at a fixed frequency (resonant frequency). The first control loop has a first demodulator 7, a first low-pass filter 8, a frequency regulator 9, a VCO (voltage controlled oscillator) 10 and a first modulator 11. A second control loop controls ~~is used for controlling~~ the stimulation oscillation at a constant amplitude and includes ~~has~~ a second demodulator 12, a second low-pass filter 13 and an amplitude regulator 14.

Third and fourth control loops are used for resetting ~~those~~ forces that ~~which~~ stimulate the read oscillation. ~~In this case,~~ The third control loop includes a third demodulator 15, a third low-pass filter 16, a quadrature regulator 17 and a second modulator 18. The fourth control loop comprises ~~contains~~ a fourth demodulator 19, a fourth low-pass filter 20, a rotation rate regulator 21 and a third modulator 22.

The first resonator 3 is stimulated at its resonant frequency ω1. The resultant stimulation oscillation is tapped off, ~~is~~ demodulated in phase by means of the first demodulator 7, and a demodulated signal component ~~is~~ passed to the first low-pass filter 8 that removes the sum frequencies ~~from it~~. The tapped-off signal is ~~also~~ referred to below ~~in the following text~~ as the tapped-off stimulation oscillation signal. An output ~~signal~~ from the first low-pass filter 8 is supplied to a frequency regulator 9 that ~~which~~ controls the VCO 10 as a function of the applied signal ~~that is supplied to it~~ so that the in-phase component essentially tends to zero. For this ~~purpose~~, the VCO 10 sends ~~passes~~ a signal to the first modulator 11, which ~~itself~~ controls a force transmitter so that a stimulation force is applied to the first resonator 3. When ~~If~~ the in-phase component is zero, the first resonator 3 oscillates at its resonant frequency ω1. It should be mentioned that all of the modulators and demodulators are operated on the basis of ~~this~~ resonant frequency ω1.

The tapped-off stimulation oscillation signal is also ~~furthermore~~ passed to the second control loop and ~~is~~ demodulated by the second demodulator 12. The ~~whose~~ output of the second demodulator 12 is passed through the second low-pass filter 13, whose output signal is, in turn, applied ~~supplied~~ to the amplitude regulator 14. The amplitude regulator 14 controls the first modulator 11 as a function of such ~~this~~ signal and of a nominal amplitude transmitter 23 such that the first resonator 3 oscillates at a constant amplitude (i.e. ~~that is to say~~ the stimulation oscillation has ~~a~~ constant amplitude).

As has already been mentioned, movement or rotation of the Coriolis gyro 1 results in Coriolis forces (indicated by ~~the term~~ $FC \bullet \cos(\omega 1 \bullet t)$ in the drawing) that ~~which~~ couple the first resonator 3 to the second resonator 4, causing ~~and thus cause~~ the second resonator 4 to oscillate. A resultant read oscillation at ~~the~~ frequency $\omega 2$ is tapped off~~,~~ so that a corresponding tapped-off read oscillation signal (read signal) is supplied to both the third and fourth control loops. In the third control loop, this signal is demodulated by means of the third demodulator 15, the sum frequencies ~~are~~ removed by the third low-pass filter 16, and the low-pass-filtered signal ~~is~~ supplied to a ~~the~~ quadrature regulator 17 whose output ~~signal~~ is applied to the third modulator 22 so ~~such~~ that corresponding quadrature components of the read oscillation are reset. Analogously ~~to this~~, the tapped-off read oscillation signal is demodulated in the fourth control loop by means of a ~~the~~ fourth demodulator 19. It then passes through a ~~the~~ fourth low-pass filter 20 and ~~the correspondingly low pass-~~filtered signal is applied ~~on the one hand~~ to a ~~the~~ rotation rate regulator 21. The ~~whose~~ output ~~signal~~ of the rotation rate regulator 21 is proportional to the instantaneous rotation rate and ~~which~~ is passed as the rotation rate measurement ~~result~~ to a rotation rate output 24 and is applied ~~on the other hand~~ to the second modulator 18, which resets the corresponding rotation rate components of the read oscillation.

A Coriolis gyro 1 as described above can ~~may~~ be operated ~~not only~~ in either a double-resonant form or ~~but also~~ in a form in which it is not double-resonant. When ~~If~~ the Coriolis gyro 1 is operated in a double-resonant form,

~~then~~ the frequency of $\omega2$ of the read oscillation is approximately equal to the frequency $\omega1$ of the stimulation oscillation. ~~While~~ In contrast, when it is operated in a form in which it is not double-resonant, the frequency $\omega2$ of the read oscillation differs from the frequency $\omega1$ of the stimulation oscillation. In the case of double-resonance, the output signal from the fourth low-pass filter 20 contains ~~corresponding~~ information about the rotation rate, while, when it is not operated in ~~a~~ double-resonant form, ~~on the other hand, it is~~ the output signal from the third low-pass filter 16 contains the rotation rate information. A doubling switch 25 which selectively connects the outputs of the third and fourth low-pass filters 16, 20 to the rotation rate regulator 21 and to the quadrature regulator 17 is provided for switching ~~in order to switch~~ between the double-resonant and non- double resonant modes.

When the Coriolis gyro 1 is ~~intended to be~~ operated in a double-resonant form, the frequency of the read oscillation is ~~must be~~ tuned, as mentioned, to that ~~the frequency~~ of the stimulation oscillation. This may be done ~~achieved~~ to the resonator 2, for example by mechanical means, in which material is removed from the mass system. As an alternative ~~to this~~, the frequency of ~~the~~ read oscillation can ~~also~~ be set by means of an electrical field in which the resonator 2 is mounted to ~~so that it can~~ oscillate (i.e., by changing the electrical field strength). It is thus possible to tune the frequency of the read oscillation to the frequency of the stimulated oscillation electronically during operation of the Coriolis gyro 1 ~~as well~~.

SUMMARY AND OBJECTS OF THE INVENTION

It is an object of ~~The object on which~~ the invention ~~is based is~~ to provide a method for electronically tuning ~~by means of which~~ the frequency of the read oscillation in a Coriolis gyro ~~can be electronically tuned~~ to that ~~the frequency~~ of the stimulation oscillation.

The preceding and other objects are addressed by the present invention which provides, in a first aspect, a method for electronic tuning of the frequency of the read oscillation to the frequency of the stimulation oscillation in a resetting Coriolis gyro.

A disturbance force is applied to the resonator of the gyro so that the stimulation oscillation remains essentially uninfluenced. The read oscillation is changed so that a read signal that represents the read oscillation contains a corresponding disturbance component defined as the force caused by the signal in the read signal. The frequency of the read oscillation is controlled so that the magnitude of the disturbance component contained in the read signal is as small as possible.

In a second aspect, the invention provides a Coriolis gyro. The gyro is characterized by a device for electronic tuning of the frequency of the read oscillation to the frequency of the stimulation oscillation.

Such device includes a noise detection unit that determines the noise component of a read signal that

represents the read oscillation. A control unit is provided that controls the frequency of the read oscillation so that the magnitude of the noise component contained in the read signal is as small as possible.

The preceding and other features of the invention will become further apparent from the detailed description that follows. Such description is accompanied by a set of drawings. Numerals of the drawings, corresponding to those of the written description, point to the features of the invention with like numerals referring to like features throughout.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic diagram ~~shows the schematic design~~ of a Coriolis gyro ~~which is~~ based on the method of the invention; and

Figure 2 is a schematic diagram of a Coriolis gyro in accordance with the prior art ~~shows the schematic design of a conventional Coriolis gyro~~.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 is a schematic diagram of a Coriolis gyro based on the method of the invention. ~~First of all, one exemplary embodiment of the method according to the invention will be explained in more detail with reference to Figure 1. In this case,~~ Parts and/or devices that correspond to those of Figure 2 are identified by the same reference symbols~~, and will not be explained once again~~. The Coriolis gyro 1' is additionally provided with a noise detection unit 26 and a read oscillation frequency

regulator 27.

~~The~~ Signal noise (inherent noise) of the read oscillation tapping electronics (~~here~~ indicated by the reference numeral 6) produces a disturbance signal in the tapped-off read oscillation signal (read signal) which is supplied to the two control loops (quadrature control loop~~,~~ and rotation rate control loop). After passing through the control loops, the disturbance signal is applied to ~~a~~ second and third modulators ~~modulator~~ 18, 22. The ~~whose corresponding~~ outputs of the modulators ~~output signals~~ are ~~in each case~~ applied to a force transmitter (not shown) and, thus, to the resonator 2. Should ~~Provided~~ the frequency of the read oscillation ~~does~~ not essentially match that ~~the frequency~~ of the stimulation oscillation, the disturbance signal is observed, after "passing through" the resonator 2, in the form of a disturbance component of the tapped-off read oscillation signal.

The disturbance signal (inherent noise) is then ~~now~~ determined by the noise detection unit 26. ~~In that~~ The tapped-off read oscillation signal or a signal ~~one of the signals which are~~ applied to or ~~are~~ emitted from ~~them~~ the quadrature regulator 17/rotation rate regulator 21 (as illustrated, ~~here.~~ a signal which is applied to the quadrature regulator 17) is tapped off and the noise component ~~is~~ extracted. The disturbance component is thus ~~therefore~~ determined.

An output signal from the noise detection unit 26 is supplied to the read oscillation frequency regulator 27

that ~~which~~ sets the frequency of the read oscillation as a function of it. Thus, ~~this, such that~~ the output signal from the noise detection unit 26~~, that is to say~~ (i.e. the strength of the observed disturbance component)~~,~~ is a minimum. When a minimum such as this has been reached, ~~then~~ the frequencies of the stimulation oscillation and ~~of~~ the read oscillation are essentially identical ~~match~~.

In ~~the case of~~ a second, alternative method for electronic tuning ~~of~~ the frequency of the read oscillation to that ~~the frequency~~ of the stimulation oscillation in a Coriolis gyro, a disturbance force is applied to the resonator of the Coriolis gyro so that ~~in such a way that~~ (a) the stimulation oscillation remains essentially uninfluenced, and (b) the read oscillation is changed such that a read signal which represents the read oscillation contains a corresponding disturbance component. In this way, ~~wherein~~ the frequency of the read oscillation is controlled so that the magnitude of the disturbance component ~~which is~~ contained in the read signal is as small as possible.

A major discovery on which the second alternative method is based is that an artificial change to the read oscillation in the rotation rate channel or quadrature channel is visible to a greater extent, in particular in the respective channel which is orthogonal to it ~~this~~, the less the frequency of the read oscillation matches the frequency of the stimulation oscillation. The "penetration strength" of a disturbance such as this to the tapped-off read oscillation signal (in particular to the orthogonal channel) is thus a measure of how

accurately the frequency of the read oscillation is matched to the frequency of the stimulation oscillation. Thus, if the frequency of the read oscillation is controlled so ~~such~~ that the penetration strength assumes a minimum (i.e., ~~that is to say~~ such that the magnitude of the disturbance component which is contained in the tapped-off read oscillation signal is a minimum) then the frequency of the read oscillation is at the same time essentially matched to the frequency of the stimulation oscillation.

In a third alternative embodiment of the method for electronic tuning of the frequency of the read oscillation to that ~~the frequency~~ of the stimulation oscillation in a Coriolis gyro, a disturbance force is applied to the resonator of the Coriolis gyro ~~it~~ such that (a) the stimulation oscillation remains essentially uninfluenced and (b) the read oscillation is changed so ~~such~~ that a read signal representing ~~which represents~~ the read oscillation contains a corresponding disturbance component. ~~Wherein~~ The frequency of the read oscillation is controlled so that any phase shift between a disturbance signal, which produces the disturbance force, and the disturbance component ~~which is~~ contained in the read signal is a small as possible. In this case, ~~the wording~~ "resonator" refers to ~~means~~ the entire mass system (or part of it) that ~~which~~ can be caused to oscillate in the Coriolis gyro (i.e., that part of the Coriolis gyro that is annotated with reference numeral ~~number~~ 2).

A significant discovery on which the third method is based is that the "time for disturbance to pass

through"~~, that is to say~~ an artificial change to the read oscillation resulting from the application of appropriate disturbance forces to the resonator~~, the resonator, that is to say~~ (i.e. the time which passes from the effect of the disturbance on the resonator until the disturbance is tapped off as part of the read signal)~~,~~ is dependent upon ~~on~~ the frequency of the read oscillation. The shift between the phase of the component signal ~~which is~~ contained in the read signal and the phase of the disturbance component signal ~~which is~~ contained in the read signal is thus a measure of the frequency of the read oscillation. It can be shown that the phase shift assumes a minimum when the frequency of the read oscillation essentially matches the frequency of the stimulation oscillation. If the frequency of the read oscillation is thus controlled so ~~such~~ that the phase shift assumes a minimum, ~~then~~ the frequency of the read oscillation is at the same time essentially matched to that ~~the frequency~~ of the stimulation oscillation.

The method ~~according to the invention which was~~ described ~~first~~ for electronic tuning of the read oscillation frequency can be combined as required with the second ~~alternative~~ method and/or with the third ~~alternative~~ method. For example, it is possible to use the second alternative method described first while the Coriolis gyro is being started up (rapid transient response), and then to use the method described first (slow control process) in steady-state operation. ~~Specific technical refinements as well as further details relating to the methods can be found by those skilled in the art in the patent applications "Verfahren zur elektronischen~~

~~Abstimmung der Ausleseschwingungfreqkuenz eines Corioliskreisels", [Method for electronic tuning of the read oscillation frequency of a Coriolis gyro], LTF-191-DE and LTF-192-DE from the same applicant, in which, respectively, the second alternative method and the third alternative method are described. The entire contents of the patent applications LTF-191-DE/LTF-192-D2 are thus hereby included in the description.~~

~~This object is achieved by the method as claimed in the features of patent claim 1. The invention furthermore provides a Coriolis gyro as claimed in patent claim 11. Advantageous refinements and developments of the idea of the invention can be found in the respective dependent claims.~~

~~According to the invention, in the case of a method for electronic tuning of the read oscillation to the frequency of the stimulation oscillation in a Coriolis gyro, the resonator of the Coriolis gyro has a disturbance force applied to it such that a) the stimulation oscillation remains essentially uninfluenced and b) the read oscillation is changed such that a read signal which represents the read oscillation contains a corresponding disturbance component, wherein the frequency of the read oscillation is controlled such that the magnitude of the disturbance component which is contained in the read signal is as small as possible.~~

~~The word~~ "Resonator" in this case refers to ~~means~~ the entire mass system that ~~which~~ can be caused to oscillate in the Coriolis gyro (i.e., ~~that is to say~~ that

part of the Coriolis gyro which is identified by the reference number 2). The essential feature in this case is that the disturbance forces on the resonator change only the read oscillation, but not the stimulation oscillation. With reference to Figure 2, this would mean that the disturbance forces act ~~acted~~ only on the second resonator 4, but not the first resonator 3.

A significant discovery on which the invention is based is that a disturbance signal, in the form of signal noise, which occurs directly in the tapped-off read oscillation signal or at the input of the control loops (rotation rate control loop/quadrature control loop), can be observed to a greater extent in the tapped-off read oscillation signal after "passing through" the control loops and the resonator, the less the frequency of the read oscillation matches the frequency of the stimulation oscillation. The signal noise (the signal noise of the read oscillation tapping-off electronics or the random walk of the Coriolis gyro) is applied, after "passing through" the control loops, to the force transmitters and thus produces corresponding disturbance forces that ~~which~~ are applied to the resonator and, thus, cause an artificial change in the read oscillation. The "penetration strength" of a disturbance such as this to the tapped-off read oscillation signal is thus a measure of how accurately the frequency of the read oscillation is matched to that of the stimulation oscillation. Thus, if the frequency of the read oscillation is controlled so ~~such~~ that the penetration strength assumes a minimum (i.e., ~~that is to say~~ the magnitude of the disturbance component which is contained in the tapped-off read

oscillation signal, that is ~~to say~~ the noise component) ~~is a minimum~~ then the frequency of the read oscillation is at the same time ~~thus~~ matched to the frequency of the stimulation oscillation.

As already mentioned, the disturbance signal results from low-frequency rotation rate noise on the tapped-off read oscillation signal~~,~~ and from ~~the~~ random walk of the added-up rotation rate angle. The disturbance signal is thus not produced artificially, and already-existing disturbance signals (noise from the read oscillation tapping-off electronics) are used instead. It can be shown that low-frequency rotation rate noise (~~/the~~ random walk of the integrated angle in the case of Coriolis gyros that are operated with double resonance, i.e., ~~that is to say~~ when the frequencies of the stimulation oscillation and read oscillation match) is several orders of magnitude less than for Coriolis gyros without double resonance. Detailed analysis shows that the reduction factor after a minimum time, which is dependent on the Q-factor of the read oscillation, is half of the value of the Q-factor of this oscillation.

It is advantageous that the disturbance is itself produced by the self-noise of the Coriolis gyro. ~~That is to say~~ No artificial disturbances/modulations are required. A further advantage is that the random walk of the Coriolis gyro can be measured at the same time during the frequency matching between the stimulation oscillation and read oscillation. In this case, it is advantageous to observe the passage of the disturbance through the quadrature control loop since no low-frequency noise

resulting from the variation of the rotation speed occurs in this, as opposed ~~control loop, in contrast~~ to the rotation rate control loop. ~~However,~~ It is a ~~has the~~ disadvantage that, when using the quadrature control loop, the process for tuning the frequency of the stimulation oscillation to that ~~the frequency~~ of the read oscillation takes a relatively long time. The disturbance component (noise component) is therefore preferably determined from a signal ~~which is~~ applied to, or ~~is~~ emitted from ~~it~~, a quadrature regulator in the quadrature control loop. Alternatively, the disturbance somponent can be determined from a signal ~~which is~~ applied to, or ~~is~~ emitted from ~~it~~, a rotation rate regulator in the rotation rate control loop.

The frequency of the read oscillation (i.e. the force transmission of the control forces which are required for frequency control) is in this case controlled by controlling the intensity of an electrical field in which at least a part of the resonator oscillates, with an electrical attraction force. Such force, preferably non-linear, is established between the resonator and an opposing piece, fixed to the frame and surrounding.

~~The invention furtermore provides a Coriolis gyro which is characterized by a device for electronic tuning of the frequency of the read oscillation to the frequency of the stimulation oscillation.~~

~~The device for electronic tuning in this case has: a noise detection unit, which determines the noise component of a read signal which represents the read~~

~~oscillation, and a control unit, which controls the frequency of the read oscillation such that the magnitude of the noise component which is contained in the read signal is as small as possible.~~

~~The noise detection unit preferably determines the noise component from a signal which is applied to a quadrature regulator in a quadrature control loop inthe Coriolis gyro, or is emitted from it. A further alternative is to determine the noise component from a signal which to a rotation rate regulator in a rotation rate control loop in the coriolis gyro, or is emitted from it. In a further alternative, the noise detection unit determines the noise component from a tapped-off read oscillation signal which is produced by a read oscillation tap. The term "read signal" covers all signals wheih are referred to in this paragraph.~~

While the invention has been described with reference to its presently-preferred embodiment, it is not limited thereto. Rather, the invention is limited only insofar as it is defined by the following set of patent claims and includes within its scope all equivalents thereof.

~~Patent Claims~~

What is claimed is:

1. A method for electronic tuning of the frequency of the read oscillation to the frequency of the stimulation oscillation in a resetting Coriolis gyro (1'), wherein

- the resonator (2) of the Coriolis gyro (1') has a disturbance force applied to it such that

a) the stimulation oscillation remains essentially uninfluenced, and

b) the read oscillation is changed such that a read signal which represents the read oscillation, contains a corresponding disturbance component, wherein

- the disturbance force is defined as that force which is caused by the signal noise in the read signal, and
- the frequency of the read oscillation is controlled such that the magnitude of the disturbance component, which is contained in the read signal, is as small as possible.

2. The method as claimed in claim 1, characterized in that the signal noise is the noise of the tapping electronics.

3. The method as claimed in claim 1 or 2, characterized in that the disturbance component is determined from a signal which is applied to a quadrature regulator (17) in the quadrature control loop, or is emitted from it.

4. The method as claimed in claim 1 or 2 characterized in that the disturbance component is determined from a signal which is applied to a rotation rate regulator (21) in the rotation rate control loop, or is emitted from it.

5. The method as claimed in one of the preceding claims, characterized in that the frequency of the read oscillation is controlled by controlling the intensity of an electrical field in which a part of the resonator (2) of the Coriolis gyro (1') oscillates.

6. A Coriolis gyro (1'), characterized by a device for electronic tuning of the frequency of the read oscillation to the frequency of the stimulation oscillation, having:
- a noise detection unit (26) which determines the noise component of a read signal which represents the read oscillation, and
- a control unit (27), which controls the frequency of the read oscillation such that the magnitude of the noise component, which is contained in the read signal, is as small as possible.

7. The Coriolis gyro (1') as claimed in claim 6, characterized in that the noise detection unit (26) determines the noise component from a signal which is applied to a rotation rate regulator (21) in a rotation rate control loop in the Coriolis gyro (1'), or is emitted from it.

8. The Coriolis gyro (1') as claimed in claim 6, characterized in that the noise detection unit (26) determines the noise component from a signal which is applied to a quadrature regulator (21) in a quadrature control loop in the Coriolis gyro (1'), or is emitted from it.

ABSTRACT

In a method for electronic tuning of the frequency of the read oscillation to the frequency of the stimulation oscillation in a Coriolis gyro ~~(1') according to the invention~~, the resonator ~~(2)~~ of the Coriolis gyro ~~(1')~~ has a disturbance force applied to it such that the stimulation oscillation remains essentially uninfluenced. ~~With~~ The read oscillation is changed so that a read signal that represents the read oscillation contains a corresponding disturbance component. The disturbance force is ~~in this case~~ defined as the force caused by the signal noise in the read signal. The frequency of the read oscillation is controlled so that the strength of the disturbance component ~~which is~~ contained in the read signal is a minimum.